

Sudden cardiac arrest (SCA) and the role of transvenous defibrillators (ICD) and sub-cutaneous defibrillators (S-ICD)

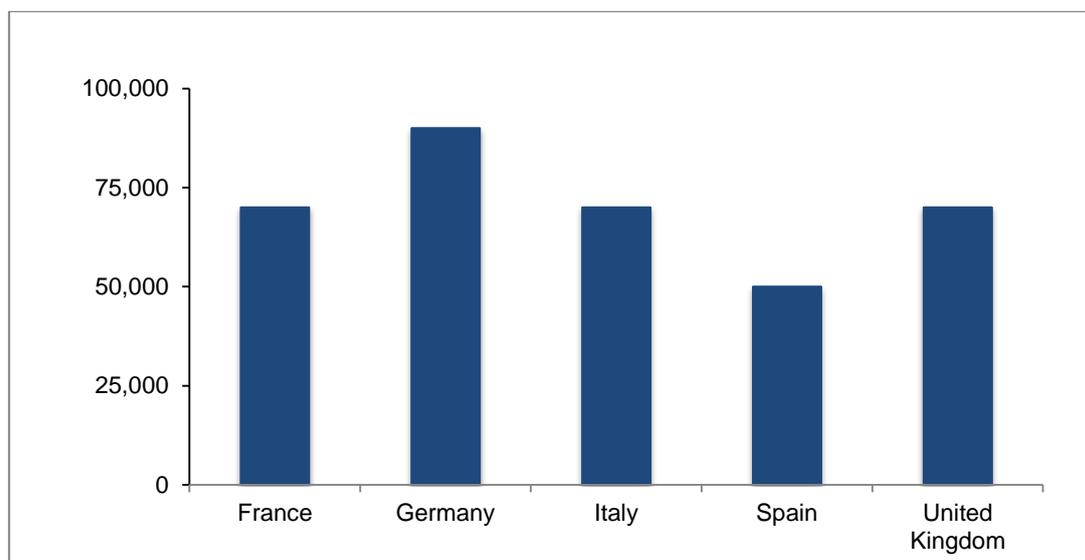
What Is Sudden Cardiac Arrest?

Sudden cardiac arrest (SCA) is a **life-threatening heart condition** that can lead to death if not treated within minutes. SCA results from an irregular or abnormal heart rhythm, due to a problem with the electrical system of the heart. There are generally two types of abnormal rhythms:

- Ventricular tachycardia (VT) is a fast heart rhythm that occurs in one ventricle. It is like an electrical short circuit that makes the heart beat at rates between 150 – 200 beats per minute.
- Ventricular fibrillation (VF) is an abnormally fast and chaotic rhythm that makes the heart beat more than 200 – 300 beats per minute. With VF, the heart quivers rapidly and cannot pump blood throughout the body. This can lead to sudden cardiac arrest (SCA). Most people with VF lose consciousness within a few seconds.

It is impossible to predict when sudden cardiac arrest might strike. Called a “silent killer,” there are often few warning signs. **About 95 per cent of people who have an SCA die before they reach hospital.**¹ **Sudden cardiac death (SCD) claims more than 350,000 lives per year in Europe**², and it is the predominant risk of death for patients with heart failure.³ Each additional year, the risk increases for patients who have suffered a myocardial infarction.⁴

Estimated annual cases of sudden cardiac death vary from country to country.^{5,6,7}



SCD is a significant **clinical burden** in Europe it is one of the largest causes of mortality, with approximately 11 per cent of all natural deaths and around half of all cardiovascular deaths attributed to SCD.⁸ SCD is also a significant **economic burden** - on a societal basis, estimated to cost between €700,000 and €1.3 million per case.^{6,9}

Treatment options

If ventricular fibrillation (VF) occurs, an **implantable cardioverter defibrillator** (commonly known as an ICD) can deliver lifesaving defibrillation therapy.

An ICD is a device designed to administer lifesaving therapy in the event of SCA. When the ICD senses a dangerously high heart rate, it will send an electrical shock to the heart to reset its normal rhythm and allow it to resume pumping blood through the body —this is known as defibrillation.

Over the past decades, there have been important advancements in ICD therapy in terms of implantation procedure, reduction in device size, improved system longevity and functionality. Today, there are two types of ICDs being implanted:

- **transvenous** (through the vein) ICD systems and
- the completely **subcutaneous** EMBLEM S-ICD™ System.

Both types of ICDs sense when the heart rate is dangerously fast and can deliver a shock to the heart to stop the abnormal rhythm and restore a normal heartbeat.

For additional information on the EMBLEM S-ICD System, as well as the difference between a transvenous ICD and a subcutaneous one, please refer to the EMBLEM S-ICD factsheet.

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⁸ Zipes DP, Wellens HJ. Sudden Cardiac Death. *Circulation* 1998 (98): 2334-2351.

⁹ Del Vecchio M, Padeletti L. Cardiac sudden death in Italy. Dimensions, perceptions, policies and economic/financial impact. *Giornale Italiano di Cardiologia* 2008 Nov 9;(11 Suppl 1):5S-23S.

¹⁰ National Institute for Health and Clinical Excellence (NICE). Implantable cardioverter defibrillators for arrhythmias: Review of Technology Appraisal 11: Technology Appraisal 95. Retrieved from <http://www.nice.org.uk/TA095>. on November 30, 2012.

CAUTION: The law restricts these devices to sale by or on the order of a physician. Indications, contraindications, warnings and instructions for use can be found in the product labelling supplied with each device. Information for the use only in countries with applicable health authority product registrations.

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